

What Is Claimed Is:

1. A cationic acrylic colloidal dispersion polymer composition comprising the reaction product produced by:

5 (A) reacting in a free radical polymerization reaction a mixture comprising:

- (1) about 1.0% to about 25.0% by total weight of the mixture of a member selected from the group consisting of amine-containing ethylenically unsaturated monomers and combinations thereof;
- (2) about 10.0% to about 50.0% by total weight of the mixture of a member selected from the group consisting of acrylic esters of alcohols containing from 1 to 22 carbon atoms, methacrylic esters of alcohols containing from 1 to 22 carbon atoms, styrene, substituted styrenes, acrylonitrile, methacrylonitrile, vinyl chloride, vinylidene chloride, vinyl ethers, vinyl esters, N-vinyl amides, and combinations thereof;
- (3) up to about 8.0% by total weight of the mixture of a member selected from the group consisting of ethylenically unsaturated monomers containing at least one quaternary ammonium group and combinations thereof;
- (4) up to about 8.0% by total weight of the mixture of a member selected from the group consisting of ethylenically unsaturated monomers containing at least one hydroxyl group and combinations thereof;
- (5) up to about 8.0% by total weight of the mixture of a member selected from the group consisting of N-hydroxymethyl acrylamide, N-hydroxymethyl methacrylamide, N-hydroxymethyl-substituted acrylamide, N-hydroxymethyl-substituted methacrylamide, and combinations thereof;
- (6) up to about 4.0% by total weight of the mixture of a chain transfer agent;
- (7) about 0.5% to about 8.0% by total weight of the mixture of a surfactant selected from the group consisting of nonionic surfactants, cationic surfactants, and combinations thereof;
- (8) a catalytic amount of polymerization initiator; and

- (9) the balance of the mixture being water; to produce an emulsion polymerization product having a solids content in the range of about 25.0% to about 50.0%; and
- (B) adjusting said emulsion polymerization product to a pH in the range of about 3.5 to about 7.0 to produce the cationic acrylic colloidal dispersion polymer composition.

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2. The cationic acrylic colloidal dispersion polymer composition of claim 1 which further comprises the reaction product produced by:

(A) reacting in a free radical polymerization reaction a mixture of monomers comprising:

- (1) about 4.0% to about 18.0% by total weight of the mixture of a member selected from the group consisting of amine-containing ethylenically unsaturated monomers and combinations thereof;
- (2) about 15.0% to about 40.0% by total weight of the mixture of a member selected from the group consisting of acrylic esters of alcohols containing from 1 to 22 carbon atoms, methacrylic esters of alcohols containing from 1 to 22 carbon atoms, styrene, substituted styrenes, acrylonitrile, methacrylonitrile, vinyl chloride, vinylidene chloride, vinyl ethers, vinyl esters, N-vinyl amides, and combinations thereof;
- (3) up to about 5.0% by total weight of the mixture of a member selected from the group consisting of ethylenically unsaturated monomers containing at least one quaternary ammonium group and combinations thereof;
- (4) up to about 5.0% by total weight of the mixture of a member selected from the group consisting of ethylenically unsaturated monomers containing at least one hydroxyl group and combinations thereof;
- (5) up to about 5.0% by total weight of the mixture of a member selected from the group consisting of N-hydroxymethyl acrylamide, N-hydroxymethyl methacrylamide, N-hydroxymethyl-substituted acrylamide, N-hydroxymethyl-substituted methacrylamide, and combinations thereof;
- (6) up to about 3.0% by total weight of the mixture of a chain transfer agent;
- (7) about 1.0% to about 5.0% by total weight of the mixture of a surfactant selected from the group consisting of nonionic surfactants, cationic surfactants, and combinations thereof;
- (8) a catalytic amount of polymerization initiator; and
- (9) the balance of the mixture being water; to produce an emulsion polymerization product having a solids content in the range of about 30.0% to about 45.0%; and

(B) adjusting said emulsion polymerization product to a pH in the range of about 4.0 to about 6.0 to produce the cationic acrylic colloidal dispersion polymer composition.

3. The cationic acrylic colloidal dispersion polymer composition of claim 1 wherein the amine-containing ethylenically unsaturated monomer is a member selected from the group consisting of dimethylaminoethyl acrylate, dimethylaminoethyl methacrylate, diethylaminoethyl methacrylate, t-butylaminoethyl methacrylate, dimethylaminopropyl methacrylamide, allylamine, 2-vinylpyridine, 4-vinylpyridine, and combinations thereof.

4. The cationic acrylic colloidal dispersion polymer composition of claim 1 wherein the ethylenically unsaturated monomer containing at least one quaternary ammonium group is a member selected from the group consisting of vinylbenzyltrimethylammonium chloride, methacryloyloxyethyltrimethylammonium chloride, methacrylamidopropyltrimethylammonium chloride, and combinations thereof.

5. The cationic acrylic colloidal dispersion polymer composition of claim 1 wherein the ethylenically unsaturated monomer containing at least one quaternary ammonium group is a member selected from the group consisting of hydroxyethyl acrylate, hydroxypropyl acrylate, hydroxybutyl acrylate, hydroxyethyl methacrylate, hydroxypropyl methacrylate, butanediol monovinyl ether, allyl alcohol, and combinations thereof.

6. The cationic acrylic colloidal dispersion polymer composition of claim 1 wherein the chain transfer agent is a member selected from the group consisting of dodecyl mercaptan, 2-mercaptoethanol, alkyl mercaptopropionates, mercaptoacetic acid, mercaptopropionic acid, octyl mercaptan, and combinations thereof.

7. The cationic acrylic colloidal dispersion polymer composition of claim 1 wherein the nonionic surfactant is a member selected from the group consisting of ethoxylated alkylphenols, ethoxylated fatty alcohols, ethylene oxide/propylene oxide block copolymers, and combinations thereof.

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8. The cationic acrylic colloidal dispersion polymer composition of claim 1 wherein the cationic surfactant is a member selected from the group consisting of alkyltrimethylammonium salts wherein the alkyl group contains from 8 to 22 carbon atoms and the counterion of the salt is a member selected from the group consisting of chloride, bromide, methylsulfate, and ethylsulfate; alkylbenzyltrimethylammonium salts wherein the alkyl group contains from 8 to 22 carbon atoms and the counterion of the salt is a member selected from the group consisting of chloride, bromide, methylsulfate, and ethylsulfate; alkylpyridinium salts wherein the alkyl group contains from 8 to 22 carbon atoms and the counterion of the salt is a member selected from the group consisting of chloride, bromide, methylsulfate, and ethylsulfate; and combinations thereof.

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9. The cationic acrylic colloidal dispersion polymer composition of claim 1 wherein the polymerization initiator comprises from about 0.1% to about 3.0% by total weight of the mixture and is a member selected from the group consisting of thermal initiators, redox initiators, and combinations thereof.

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10. The cationic acrylic colloidal dispersion polymer composition of claim 9 wherein the thermal initiator is a member selected from the group consisting of hydrogen peroxide, t-butyl hydroperoxide, di-t-butyl peroxide, benzoyl peroxide, benzoyl hydroperoxide, 2,4-dichlorobenzoyl peroxide, t-butyl peracetate, azobisisobutyronitrile, isopropyl peroxy carbonate, and combinations thereof.

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11. The cationic acrylic colloidal dispersion polymer composition of claim 9 wherein the redox initiator is a member selected from the group consisting of cumene hydroperoxide-sodium metabisulfite, cumene hydroperoxide-iron (II) sulfate, and combinations thereof.

5 12. The cationic acrylic colloidal dispersion polymer composition of claim 1 wherein the pH of the emulsion polymerization product is adjusted via addition of an acid selected from the group consisting of mineral acids, water-soluble carboxylic acids, water-soluble sulfonic acids, and combinations thereof.

10 13. The cationic acrylic colloidal dispersion polymer composition of claim 12 wherein the acid is a member selected from the group consisting of acetic acid, propionic acid, glycolic acid, lactic acid, and combinations thereof.

14. An ink jet receptive coating comprising the cationic acrylic colloidal dispersion polymer composition of claim 1.

15. The ink jet receptive coating of claim 14 wherein the coating further comprises a pigment.

20 16. The ink jet receptive coating of claim 15 wherein the pigment is a member selected from the group consisting of silica, alumina, plastic pigments, calcium carbonate, kaolin clay, and combinations thereof.

25 17. An ink jet printable product comprising a substrate coated on at least one side with the coating of claim 14.

18. The ink jet printable product of claim 17 where the substrate is a member selected from the group consisting of paper, paperboard, wood, plastic film, metal foil, textiles, and combinations thereof.